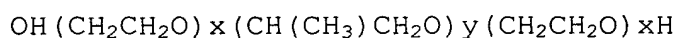


What is claimed is:

1. In a method for forming a porous silica film using a hydrolyzable alkoxy silane compound, water, an alcohol and a surfactant, the method for forming a porous silica film, which  
5 comprises using one or more kinds of nonionic surfactant(s) having a 0.1 weight % concentration according to the Du Nouy method expression and a surface tension of 45mN/m or larger at 25°C as the surfactant, coating a mixed solution obtained by mixing the nonionic surfactant, the alkoxy silane compound,  
10 water and the alcohol on a substrate, and decomposing or burning out the surfactant in the mixed solution.

2. The method for forming a porous silica film according to claim 1, wherein the nonionic surfactant comprises a  
15 polyoxyethylene-polyoxypropylene condensate represented by [Chemical formula 1].

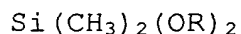


• • [Chemical formula 1]

(In a rational formula [Chemical formula 1], x and y denote an  
20 integer satisfying  $1 \leq x \leq 185$  and  $5 \leq y \leq 70$ , respectively.)

3. The method for forming a porous silica film according to claim 2, wherein a mixing ratio in the mixed solution is 8 to 50 mole of the water, and 0.1 to 0.5 mole of the  
25 polyoxyethylene-polyoxypropylene condensate represented by [Chemical formula 1] relative to 1 mole of the alkoxy silane compound.

4. The method for forming a porous silica film according to claim 3, wherein 0.05 to 0.5 mole of a dimethyldialkoxysilane compound represented by [Chemical formula 2] is further added  
5 to the mixed solution.



• • • [Chemical formula 2]

(In a rational formula [Chemical formula 2], a substituent R denotes a methyl group or an ethyl group).

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5. The method for forming a porous silica film according to any one of claims 1 to 4, wherein a mixed surfactant obtained by mixing a cationic or nonionic surfactant into the nonionic surfactant is used as the surfactant.

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6. The method for forming a porous silica film according to any one of claims 1 to 4, wherein a worm-hole porous structure can be observed by a sectional transmission electron microscope in a silica film formed by decomposition or burning  
20 out the surfactant.

20

7. The method for forming a porous silica film according to claim 5, wherein a worm-hole porous structure can be observed by a sectional transmission electron microscope in a silica  
25 film formed by decomposition or burning out the surfactant.